

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Canton

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TestAmerica Job ID: 240-24359-1

Client Project/Site: Belews - FGD Wastewater Study-J13050208

For:

Duke Energy Corporation

13339 Hagers Ferry Road

Huntersville, North Carolina 28078

Attn: Mr. Joseph Potts

Denise Pohl

Authorized for release by:

5/31/2013 6:49:03 PM

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Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Duke Energy Corporation
Project/Site: Belews - FGD Wastewater Study-J13050208

TestAmerica Job ID: 240-24359-1

Qualifiers

Metals

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

General Chemistry

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Duke Energy Corporation
Project/Site: Belews - FGD Wastewater Study-J13050208

TestAmerica Job ID: 240-24359-1

Job ID: 240-24359-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Duke Energy Corporation

Project: Belews - FGD Wastewater Study-J13050208

Report Number: 240-24359-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

The 353.2 Nitrate-Nitrite as Nitrogen analysis was performed at the TestAmerica Pittsburgh laboratory.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 05/14/2013; the samples arrived in good condition, properly preserved and on ice. The temperature of the cooler at receipt was 4.6 C.

TOTAL RECOVERABLE METALS (ICP)

Samples EFFLENT TANK-CS (240-24359-1), BIO 2 EFFLUENT-BC (240-24359-2), 2ND STAGE CELL-RS (240-24359-3), BIO 2 EFFLUENT-AS (240-24359-4) and EFFLUENT TANK-MF (240-24359-5) were analyzed for total recoverable metals (ICP) in accordance with EPA Method 200.7. The samples were prepared on 05/15/2013 and 05/16/2013 and analyzed on 05/23/2013.

Samples EFFLENT TANK-CS (240-24359-1)[10X], BIO 2 EFFLUENT-BC (240-24359-2)[5X], 2ND STAGE CELL-RS (240-24359-3)[5X], BIO 2 EFFLUENT-AS (240-24359-4)[10X] and EFFLUENT TANK-MF (240-24359-5)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Method(s) 200.7 Rev 4.4: The following sample(s) was diluted due to the nature of the sample matrix: 2ND STAGE CELL-RS (240-24359-3), BIO 2 EFFLUENT-AS (240-24359-4), BIO 2 EFFLUENT-BC (240-24359-2), EFFLENT TANK-CS (240-24359-1), EFFLUENT TANK-MF (240-24359-5). Elevated reporting limits (RLs) are provided.



Case Narrative

Client: Duke Energy Corporation
Project/Site: Belews - FGD Wastewater Study-J13050208

TestAmerica Job ID: 240-24359-1

Job ID: 240-24359-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

No other difficulties were encountered during the metals analyses.

All other quality control parameters were within the acceptance limits.

TOTAL RECOVERABLE METALS (ICPMS)

Samples EFFLENT TANK-CS (240-24359-1), BIO 2 EFFLUENT-BC (240-24359-2), 2ND STAGE CELL-RS (240-24359-3), BIO 2 EFFLUENT-AS (240-24359-4) and EFFLUENT TANK-MF (240-24359-5) were analyzed for total recoverable metals (ICPMS) in accordance with EPA Method 200.8. The samples were prepared on 05/15/2013 and 05/16/2013 and analyzed on 05/28/2013.

Samples EFFLENT TANK-CS (240-24359-1)[100X], BIO 2 EFFLUENT-BC (240-24359-2)[50X], 2ND STAGE CELL-RS (240-24359-3)[20X], BIO 2 EFFLUENT-AS (240-24359-4)[50X] and EFFLUENT TANK-MF (240-24359-5)[100X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Method(s) 200.8: The following sample(s) was diluted due to the nature of the sample matrix: 2ND STAGE CELL-RS (240-24359-3), BIO 2 EFFLUENT-AS (240-24359-4), BIO 2 EFFLUENT-BC (240-24359-2), EFFLENT TANK-CS (240-24359-1), EFFLUENT TANK-MF (240-24359-5). Elevated reporting limits (RLs) are provided.

No other difficulties were encountered during the metals analyses.

All other quality control parameters were within the acceptance limits.

NITRATE-NITRITE AS NITROGEN

Samples EFFLENT TANK-CS (240-24359-1), BIO 2 EFFLUENT-BC (240-24359-2), 2ND STAGE CELL-RS (240-24359-3), BIO 2 EFFLUENT-AS (240-24359-4) and EFFLUENT TANK-MF (240-24359-5) were analyzed for nitrate-nitrite as nitrogen in accordance with EPA Method 353.2. The samples were analyzed on 05/21/2013.

Samples EFFLENT TANK-CS (240-24359-1)[25X] and EFFLUENT TANK-MF (240-24359-5)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Method(s) 353.2: The following samples were diluted to bring the concentration of target analytes within the calibration range: EFFLENT TANK-CS (240-24359-1), EFFLUENT TANK-MF (240-24359-5). Elevated reporting limits (RLs) are provided.

Method(s) 353.2: Reanalyses and or dilution analyses of these samples were inadvertently not followed by a CCV, CCB and Baseline sequence of analyses (after the sample at #85). Instead they were followed by a LCS, MB and Baseline sequence which initiated the analyses of a small set of other additional samples that were added late in the analytical run. The omission of the CCV, CCB, Baseline sequence should not affect the quality of the analytical data associated with these reanalyses and dilution analyses since the LCS, MB and Baseline sequence met all QC acceptance criteria. The omission of the CCV, CCB and Baseline sequence occurred when the other additional samples were added to the end of the analytical run and the closing CCV, CCB and Baseline sequence that had been present was overwritten.

No difficulties were encountered during the nitrate-nitrite analyses.

All quality control parameters were within the acceptance limits.

LOW LEVEL MERCURY

Samples EFFLENT TANK-CS (240-24359-1), BIO 2 EFFLUENT-BC (240-24359-2), 2ND STAGE CELL-RS (240-24359-3), BIO 2 EFFLUENT-AS (240-24359-4) and EFFLUENT TANK-MF (240-24359-5) were analyzed for Low Level Mercury in accordance with EPA Method 1631E. The samples were prepared on 05/22/2013 and analyzed on 05/23/2013.

Samples EFFLENT TANK-CS (240-24359-1)[10X], 2ND STAGE CELL-RS (240-24359-3)[1000X] and EFFLUENT TANK-MF (240-24359-5)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Method(s) 1631E: A MS/MSD was not performed on sample BIO 2 EFFLUENT-BC (240-24359-2) due to lab oversight. If only one container will be provided in future events, a post digestion spike will have to be performed to meet client request, however, the standard procedure is to spike a separate aliquot for the MS and for the MSD prior to digestion, therefore separate aliquots for the spike and spike

Case Narrative

Client: Duke Energy Corporation
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Laboratory: TestAmerica Canton (Continued)

duplicate are better suited for the analysis.

No other difficulties were encountered during the Low Level Mercury analyses.

All other quality control parameters were within the acceptance limits.

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Method Summary

Client: Duke Energy Corporation

Project/Site: Belews - FGD Wastewater Study-J13050208

TestAmerica Job ID: 240-24359-1

Method	Method Description	Protocol	Laboratory
1631E	Mercury, Low Level (CVAFS)	EPA	TAL CAN
200.7 Rev 4.4	Metals (ICP)	EPA	TAL CAN
200.8	Metals (ICP/MS)	EPA	TAL CAN
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL PIT

Protocol References:

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Client Sample Results

Client: Duke Energy Corporation
Project/Site: Belews - FGD Wastewater Study-J13050208

TestAmerica Job ID: 240-24359-1

Client Sample ID: EFFLUENT TANK-MF

Lab Sample ID: 240-24359-5

Date Collected: 05/08/13 13:30

Matrix: Water

Date Received: 05/14/13 09:30

Method: 1631E - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	93		5.0	ng/L		05/22/13 16:15	05/23/13 14:38	10

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	100	U	100	ug/L		05/15/13 07:56	05/23/13 20:24	10
Selenium	980		50	ug/L		05/15/13 07:56	05/23/13 20:24	10

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	500	U	500	ug/L		05/15/13 07:56	05/28/13 10:57	100
Selenium	980		500	ug/L		05/15/13 07:56	05/28/13 10:57	100

General Chemistry

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	38		1.0	mg/L			05/21/13 14:20	10

TestAmerica Canton